

Minutes from Trace XML WG Meeting in Barcelona, Feb 5-6, 2009

“The Future Direction of TraceCore XML”

Participants:

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The meeting was a followup from a workshop in Oslo in December 2008. The main purpose with that workshop and this followup was to consider a suggestion from TraceTracker regarding the future of TraceCore XML (TCX) after the Trace project ends. The suggestion is that TCX becomes compliant with the industry standard **EPCIS** from EPCglobal.

The reasons for leaving the old format and move towards EPCIS XML are well explained in various documents distributed previously, and they were also restated in a presentation from TraceTracker at the start of the workshop, so they are not repeated here. They will be made available to anyone interested outside the TCX group though – the plan is to publish all documentation in the TraceFood Wiki¹.

FoodReg and Maritech agreed on the reasoning and arguments, so we started to examine the functional, practical and technical consequences of an alignment with EPCIS. First of all it was natural to check if the current scope and goal with TCX was possible to realize through EPCIS. As a “tool” for doing this, Maritech had already started the work of developing an **abstract model** for TCX after the Oslo meeting. This model can be thought of as a way of documenting our gathered knowledge in the TCX sub-project so far. The model was elaborated upon and checked with the EPCIS model, and we did not identify any show stoppers for aligning TCX with EPCIS XML formats. Here are some highlights from the discussion:

- *The abstract model.* While an important delivery from our group will be an XML format with documentation, we think that the abstract model is an equally important delivery. As stated above, it will function as a container for our gathered knowledge so far. In addition, it will provide a way of mapping onto other XML formats later if that should be needed.

¹ www.tracefood.org

- The TCX `TraceDocumentID` and `TraceDocumentParty` has counterparts in the `EPCISHeader` element, no problem to map between. In addition, the `EPCISHeader` element can be freely extended by businesses and industry groups.
- To register *property logs* (i.e time series of some property as for instance temperature), an EPC event has to be registered for each timestamp. The log can be retrieved through the EPCIS Query Interface and the “raw” data will be the single events for each timestamp. The client application layer may choose to aggregate these events and present the data with less byte overhead. When EPC Discovery Services (DS) are specified and implemented, temperature logs may be retrieved from the whole chain from one single point of access provided the client is authorized to do so.
- In the current revision of TCX, there is no separation between event/transactional data and what is commonly referred to as *master data*. In EPCIS, there is a clear separation between the two. This “split-and-rule” principle is very important for both data capture applications as well as data query applications, management systems for master data etc.
- *Batch Transformations and internal traceability* – neither current TCX nor EPCIS supports internal batch transformations, for instance the modeling and capture of biomass splits and mixes. TraceTracker and others have studied ways of incorporating such functionality using the EPCIS extension mechanisms. The most natural extension approach would be to introduce a custom **TransformationEvent** as a new event type outside the EPCIS core. This approach was tested by TraceTracker, but it turned out that one available EPCIS product failed to even accept this event. While there may be good reasons for finding out why this was so, another less drastic approach would be to use the already well defined **AggregationEvent** to model batch transformations, and rather add some custom fields/properties to indicate the new implicit semantics. This approach has been discussed in a meeting with SINTEF, Maticq² and TraceTracker and is for the time being considered as the “best” approach. In either case, no standard EPCIS client will be able to understand these semantics, but the important thing is that the data is not rejected in any way. No decision was taken in the meeting with respect to which approach to follow, and this task is up to TraceTracker to complete. It is obviously one of the most important decisions to make when trying to incorporate batch transformations as an extension to EPCIS.
- *Event Time* – in EPCIS it is mandatory to specify Event Time. The use of this field is crucial to for instance some of the event subscription services defined by the EPCIS Capture Interface. In current TCX, all timestamps are made optional. To successfully allow this within an EPCIS XML envelope, an automatic timestamp must be generated. It could for instance be the record time for the event (this is by the way an additional optional field in the EPC Event). Similar to the transformation extension, some custom fields must be added to indicate the new semantics. Again, any standard EPCIS client application will not understand this and will interpret the event

² www.maticq.no

time as a normal event time. It is up to TraceTracker to suggest a solution for this (see Action List).

- For both the Event Time and Transformation extension it is worth noticing that a non-EPCIS based consumer of the XML will have no problems with either of the above.
- *User Properties* – In EPCIS it is well defined how custom properties can be incorporated. This is done through the so called User Vocabularies. A lot of examples are available and TraceTracker will provide examples later (see Action List).
- *“Name of the game”* – we discussed what to call the new format after transition to EPCIS, what to do with the old format etc. FoodReg suggested to keep **“TraceCore XML”** as the final name for the old format, and just call the new format **“TraceCore”**. Then we have
 - TraceCore = EPCIS + our extensions for transformations and new semantics for event time
 - TraceCore XML = the old XML format, Revision 2 Release Candidate 2
- *Demos in May* - given the short time and limited funds to implement the new EPCIS format, it was decided that we make an effort of demonstrating it with the last demonstration activity scheduled in May. However, we do not feel that this can be promised right now. As a contingency we will execute the last demonstration activity using the old TraceCore XML.
- *Query model for TraceCore* – we discussed whether we should deliver a generic query model on top of the abstract model. TraceTracker’s thinks it is enough to base this on the already defined EPCIS Query Interface and EPCIS Capture interface both being an integral part of the EPCIS specification. If Maritech finds time to suggest a generic query model, they should do that (see Action List).
- *Registering “TraceCore” with IANA or other pertinent name authorities* – we may need to have a registered name space for use in URN schemes used by traceability keys and organization keys, in EPCIS user vocabularies etc. However, at the time of this writing, it is unclear exactly what we need but it is TraceTracker’s task to find out this (see Action List).

Responsibilities and Action List

The main and generic responsibilities between the participating organizations are these:

MARITECH	Creation of abstract model to take care of our accumulated knowledge
TT	Project the abstract model onto EPCIS XML, documentation, examples
FoodReg	Produce demos based on old TCX, because too late to do EPCIS before May
NOFIMA/RIKILT	Produce data dictionary/parameter list for user defined event attributes

Actions				
#	Task	Due	Responsible	Status
1	Distribute meeting minutes from Barcelona meeting	Now	TT	✓
2	Document and publish ³ the TCX → EPCIS decision and reasoning behind. Include a description of the planned delivery by project end in December	March	TT	In progress
3	Complete and publish the abstract model	April	Maritech	In progress
4	Finish demos using old TCX format	May	FoodReg	In progress
5	<p>Create EPCIS XML examples with descriptions and documentation showing various use cases. Include the optional <code>EPCISHeader</code> element with pertinent payload if applicable for the examples:</p> <ul style="list-style-type: none"> • Data capture events using non-EPC ids • Data capture events using EPC ids, both GS1-based and GIDs (the EPC General Identifier) • Retrieval of master data on <ul style="list-style-type: none"> ○ Products ○ Organizations, locations • How to create and use a User Vocabulary • Examples showing the extensions we add, ie. The transformation stuff and new event time semantics in “TraceCore” mode • XML responses to some useful queries: <ul style="list-style-type: none"> ○ [to be filled in by TraceTracker later]... 	Summer	TT	In progress
6	<p>Document and publish some information on the most important building blocks of the EPCIS information model (refer to existing material whenever possible)</p> <ul style="list-style-type: none"> • The value chain model • The information model (information stack) • Vocabularies – what are they used for and how are they created and used? • The Capture Interface 	Summer	TT	Not started

³ all “publishing” will be done in the TraceFood Wiki on www.tracefood.org

	<ul style="list-style-type: none"> The Query Interface 			
7	Create user vocabularies based on already defined “parameter lists” for honey and mineral water	Summer	Maritech and TT	In progress
8	Check with EPCglobal the formal way of suggesting the TCX extensions as part of the official standard	March	TT	Not started
9	Support new TraceCore (EPCIS) format in GTNet	June	TT	In progress
10	Find out if it is necessary to apply for a “TraceCore” name space in IANA	Summer	TT	Not started
11	Define generic query model for the abstract model	June	Maritech	

References

The below list are the most useful reference resources for anything around EPCIS. More links will be published in the TraceFood wiki later.

- The ratified EPCIS standard. Pay attention to these sections in special: Chapter 6 and 7 and the figure on page 9.

www.epcglobalinc.org/standards/epcis/epcis_1_0_1-standard-20070921.pdf

- The ratified Tag Data Standard. Pay attention to these sections: Chapter 1 and 2 and Appendix B.

www.epcglobalinc.org/standards/tds/tds_1_4-standard-20080611.pdf

- The EPCIS FAQ

http://www.epcglobalinc.org/standards/epcis/epcis_1_0-faq-20070427.pdf